

THAT WHICH IS CLAIMED IS:

1. A process for obtaining, as a function of a received signal, frame synchronization and for identifying the cell codegroup in a cellular communication system which uses a plurality of synchronization codes, said process being preceded in a first time interval by a procedure of slot synchronization comprising an operation of correlation of said received signal with a primary sequence for obtaining corresponding energy values, said correlation operation being carried out by sending said primary sequence to at least one correlator, the process comprising the operation of correlating said received signal with at least some of said synchronization codes to obtain corresponding values of synchronization energy, said process being characterized in that it comprises:

correlating said received signal with at least some of said synchronization codes by sending in a second time interval a secondary sequence pertaining to the synchronization codes to said at least one correlator used in said first time interval for the slot synchronization procedure.

2. The process according to Claim 1, characterized in that it comprises the operation of enabling said at least one correlator by an enable signal issued in said second time interval.

3. The process according to Claim 2, characterized in that it comprises the operations of:

organizing said secondary sequence in a first part of secondary sequence and in a second part of the

secondary sequence;

splitting said at least one correlator into a first filter and a second filter; and

sending to said first filter and to said second filter said first part and said second part of the secondary sequence.

4. The process according to Claim 3, characterized in that it comprises the operation of passing from the correlation of one secondary code to that of another by changing values of just the second part of secondary sequence sent to the second filter.

5. The process according to Claim 3, characterized in that it comprises the operation of performing on the first filter a change of sign on a given set of the weights that make up the primary sequence to pass from said primary sequence to the first secondary sequence for the secondary synchronization codes.

6. A device for obtaining, as a function of a received signal, frame synchronization and for identifying the codegroup in a cellular communication system which uses a plurality of synchronization codes and which, moreover, comprises at least one primary correlator, which receives said received signal and a primary sequence for obtaining slot synchronization on a primary channel, the device further comprising at least one secondary correlator for correlating said received signal with at least some of said synchronization codes contained in a secondary sequence for obtaining corresponding energy values, said device further comprising:

a unit for determining energy values designed for searching, among said energy values, at least one maximum value, identifying, based upon said at least one maximum value, a given number of said synchronization codes; and

a processing module for obtaining said frame synchronization and for identifying said codegroup based upon said given number of said synchronization codes;

said device being characterized in that said at least one primary correlator and said at least one secondary correlator are at least in part constituted by a single correlator.

7. The device according to Claim 6, characterized in that it comprises a control module for sending enabling signals designed for controlling by switching said at least one primary correlator to operate selectively on one between said primary sequence and said secondary sequence.

8. The device according to Claim 7, characterized in that said correlator comprises a first matched filter followed in series by a second matched filter.

9. The device according to Claim 8, characterized in that downstream of said correlator is a set of masking circuits.

10. The device according to Claim 9, characterized in that the set of masking circuits comprises a plurality of masks set in parallel, one for each output of the second filter.

11. The device according to Claim 9,
characterized in that the set of masking circuits
comprises a mask which receives the outputs of the
second filter, said mask being suitable for changing
the values of its own weights under the control of a
code generator.

12. The device according to Claim 9,
characterized in that the set of masking circuits
comprises a first set of masks corresponding to a
respective code set, and said set of masking circuits
further comprises a block for obtaining the words
corresponding to the remaining synchronization codes
belonging to the subset identified by the processing
module.

13. The device according to Claim 8,
characterized in that said second filter comprises a
plurality of chains of memory elements, said chains of
memory elements being set in series, and there being
provided selection means for removing from said series
one or more of said chains of memory elements to obtain
a filter with a reduced structure.

14. The device according to Claim 6,
configured for receiving a signal in compliance with
the 3GPP standard in FDD mode.

15. The device according to Claim 6,
configured for receiving a signal in compliance with
the 3GPP standard in TDD mode.

16. The device according to Claim 6,

comprised in a receiver for a telecommunication system based upon a standard comprised in the group comprising 3GPP FDD, 3GPP TDD, UMTS, CDMA2000, IS95, and WBCDMA.

17. A computer program directly loadable into the memory of a digital computer and comprising software code portions for performing the process according to any one of Claims 1 to 5 when run on the computer.